

HEAT CONTROLLER, INC.

Comfort-Caire®

Room Air Conditioner

MODELS: RAD-101A



SERVICE MANUAL

CAUTION

- BEFORE SERVICING THE UNIT, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.
- ONLY FOR AUTHORIZED SERVICE PERSONNEL

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Safety Precautions



To prevent injury to the user or other people and property damage, the following instructions must be followed.

- Incorrect operation due to ignoring instructions will cause harm or damage. The seriousness is classified by the following indications.

⚠ WARNING This symbol indicates the possibility of death or serious injury.

⚠ CAUTION This symbol indicates the possibility of injury or damage to property only.

- Meanings of symbols used in this manual are as shown below.

	Be sure not to do.
	Be sure to follow the instruction.

⚠ WARNING

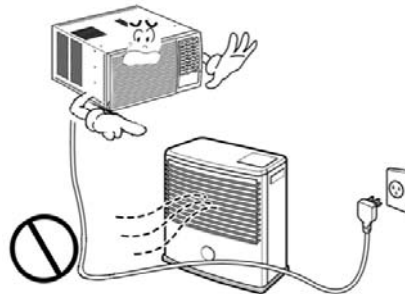
Always install the expansion panel(s).

- Improper assembly or installation may cause incorrect operation, including injury, fire, and electric shock hazards.



Do not place the power cord near a heater.

- It may cause fire and electric shock.



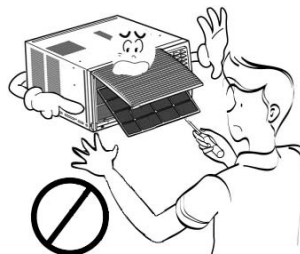
Do not use the power cord near flammable gas or combustibles such as gasoline, benzene, thinner, etc.

- It may cause explosion or fire.



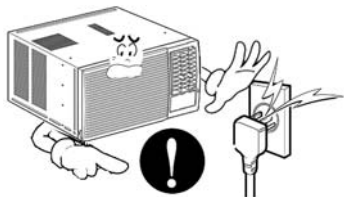
Do not disassemble or modify products.

- It may cause failure and electric shock.



Plug in the power plug properly.

- Otherwise, it will cause electric shock or fire.



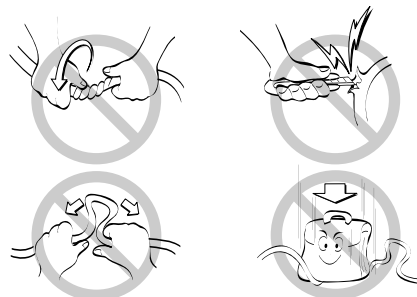
Do not operate or stop the unit by inserting or pulling out the power plug.

- It will cause electric shock or fire.



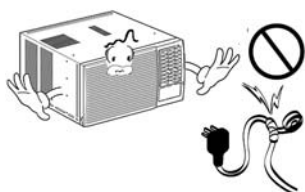
Do not damage or use an unspecified power cord.

- It will cause electric shock or fire.



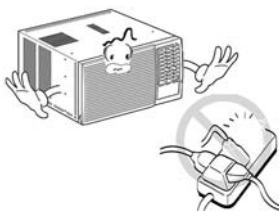
Do not modify power cord length.

- It will cause electric shock or fire.



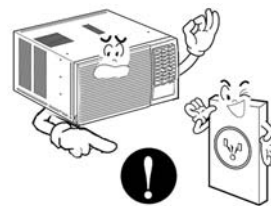
**Use the air conditioner on a single outlet circuit.(see page 7.)
Do not share the outlet with other appliances.**

- It will cause electric shock or fire.



Always plug into a grounded outlet.

- No grounding may cause electric shock.



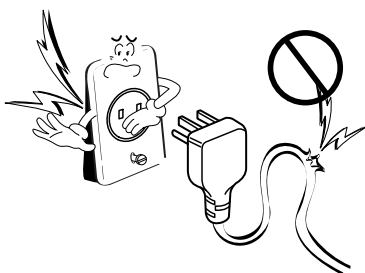
Ventilate before operating air conditioner when gas goes out.

- It may cause explosion, fire, and burn.



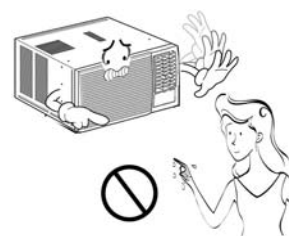
Do not use the socket if it is loose or damaged.

- It may cause fire and electric shock.



Do not operate with wet hands or in damp environment.

- It will cause electric shock.



If water enters the product, turn off the the power switch of the main body of appliance. Contact service center after taking the power-plug out from the socket.

- It will cause electric shock or failure of machine.



Do not clean the air conditioner with water.

- Water may enter the unit and degrade the insulation. It may cause an electric shock.



! CAUTION

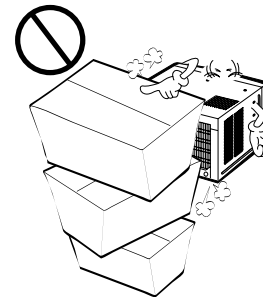
Never touch the metal parts of the unit when removing the filter.

- They are sharp and may cause injury.



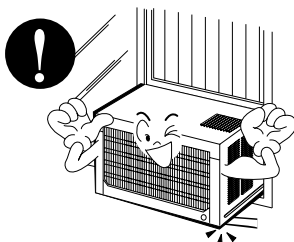
Do not block the inlet or outlet.

- It may cause failure of appliance or performance deteriorate.



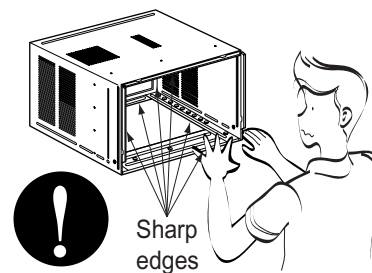
Ensure that the outer case is not damaged by age or wear.

- Leaving it damaged could result in the air conditioner falling out of the window, creating a safety hazard.



Be cautious not to touch the sharp edges when installing.

- It may cause injury.



Dimensions

Symbols Used in this Manual



This symbol alerts you to the risk of electric shock.

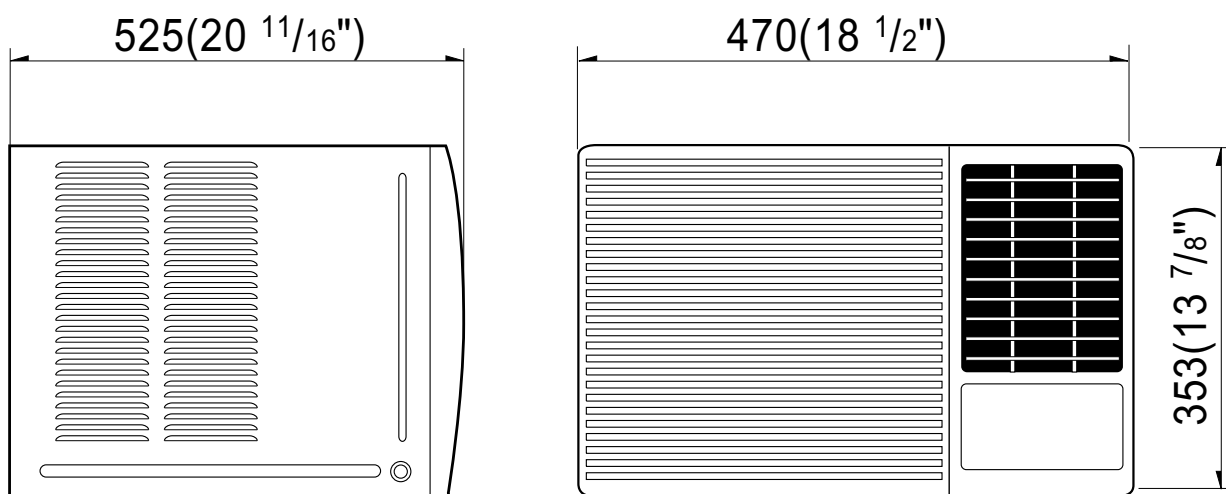


This symbol alerts you to hazards that could cause harm to the air conditioner.

NOTICE

This symbol indicates special notes.

Outside Dimensions



Product Specifications

ITEMS \ MODELS		RAD-101A	
POWER SUPPLY		1Ø, 115, 60Hz	
COOLING CAPACITY (Btu/h)		9,800	
INPUT (W)		1,000	
RUNNING CURRENT (A)		9.3	
E.E.R (BTU/W·h)		9.8	
OPERATING CONDITION	INDOOR (°C)	26.7(DB)*	19.4(WB)**
	OUTDOOR (°C)	35(DB)*	23.9(WB)**
REFRIGERANT (R-22) CHARGE		410g(14.5oz)	
EVAPORATOR		Ø 7.0, 3ROW 14STACKS	
CONDENSER		Ø 7.0 , 2R 16STACKS(L)	
FAN, INDOOR		TURBO FAN	
FAN, OUTDOOR		PROPELLER TYPE FAN WITH SLINGER RING	
FAN SPEEDS, FAN/COOLING		3/3	
FAN MOTOR		6 POLES	
OPERATION CONTROL		REMOTE CONTROLLER	
ROOM TEMP. CONTROL		THERMISTOR	
AIR DIRECTION CONTROL		HORIZONTAL LOUVER (UP & DOWN), VERTICAL LOUVER (RIGHT&LEFT)	
CONSTRUCTION		SLIDE IN-OUT CHASSIS	
PROTECTOR	COMPRESSOR	OVERLOAD PROTECTOR	
	FAN MOTOR	INTERNAL THERMAL PROTECTOR	
POWER CORD		3 WIRE WITH GROUNDING	
		ATTACHMENT PLUG (CORD-CONNECTED TYPE)	
DRAIN SYSTEM		DRAIN PIPE OR SPLASHED BY FAN SLINGER	
OUTSIDE DIMENSION (W x H x D)	(inch)	18 1/2 x 13 7/8 x 20 11/16	
	(mm)	469 x 353 x 526	

* DB:Dry Bulb

** WB:Wet Bulb

Installation

Select the Best Location

1. To prevent vibration and noise, make sure the unit is installed securely and firmly.
2. Install the unit where the sun does not shine directly on the unit.
3. The outside of the cabinet must extend outward for at least 11" and there should be no obstacles, such as a fence or wall, within 20" from the back of the cabinet because it will prevent heat radiation of the condenser. Restriction of outside air will greatly reduce the cooling efficiency of the air conditioner.



CAUTION: All side louvers of the cabinet must remain exposed on the outside of the structure.

4. Install the unit slanted slightly so the back is slightly lower than the front (about $\frac{1}{4}$ "). This will force condensed water to the outside.
5. Install the unit with the bottom about 30"~60" above the floor level.

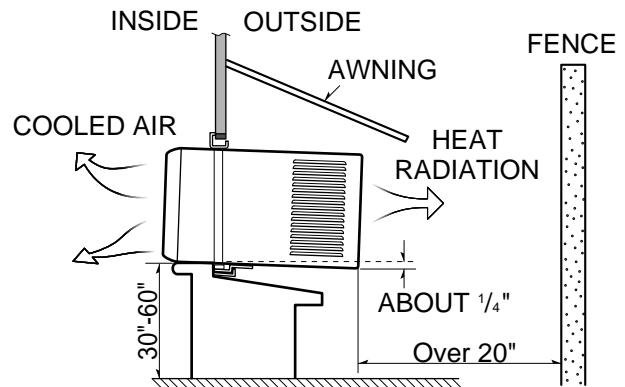


Figure 1

Installation Check

The setting conditions must be checked prior to initial starting.

The following items are especially important checking points when the installation is finished.

1. Grounding wire (Green or Green and Yellow) is provided in the power cord. The green wire must be grounded.
2. Connect to a single-outlet 15A circuit.
(or 20A circuit for Electric Heater Model)
3. To avoid vibration or noise, make sure the air conditioner is installed securely.
4. Avoid placing furniture or draperies in front of the air inlet and outlet.

How to Secure the Drain Pipe

In humid weather, excess water may cause the Base Pan to overflow. To drain the water, remove the Drain Cap and secure the Drain Pipe to the rear hole of the Base Pan. (Figure. 2)

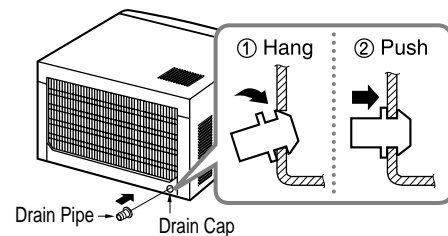


Figure 2

How to Install

Window Requirements

NOTICE All supporting parts should be secured to firm wood, masonry, or metal.

1. This unit is designed for installation in standard double hung windows with actual opening widths of 22" to 36". The upper and lower sash must open sufficiently to allow a clear vertical opening of 15" from the bottom of the sash to the window stool.
2. If storm window presents interference, fasten a 2" wide wood strip to the inner window sill across the full width of the sill. The wood strip should be thick enough to raise the height of the window sill so that the unit can be installed without interference by the storm window frame. See Figure. 4. Top of wood strip should be approximately 3/4" higher than the storm window frame (STORM WINDOW FRAME) or wood strip (OUTDOORS) to help condensation to drain properly to the outside.
3. Install a second wood strip (approximately 6" long by 1 1/2" wide and same thickness as first strip) in the center of the outer sill flush against the back off the inner sill. This will raise the L bracket as shown Figure. 4.
4. If the distance between STORM WINDOW FRAME and WOOD STRIP MOUNTED ON TOP OF INNER SILL is more than 1", two of wood strip are not necessary.

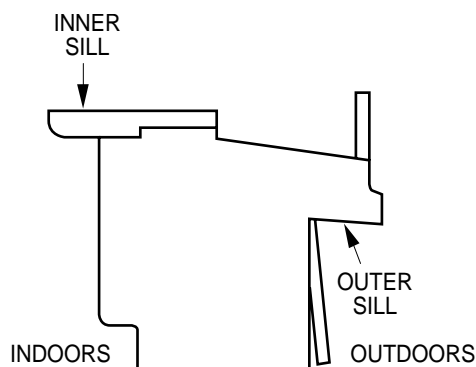


Figure 3

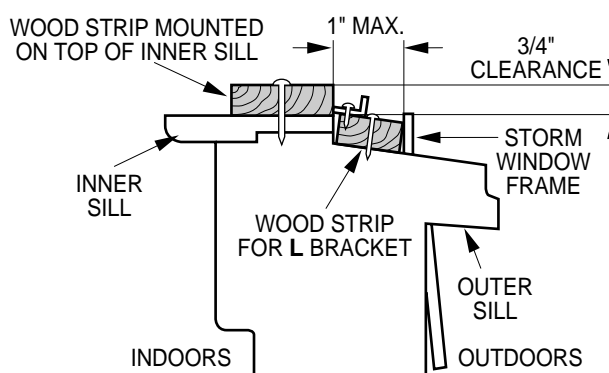


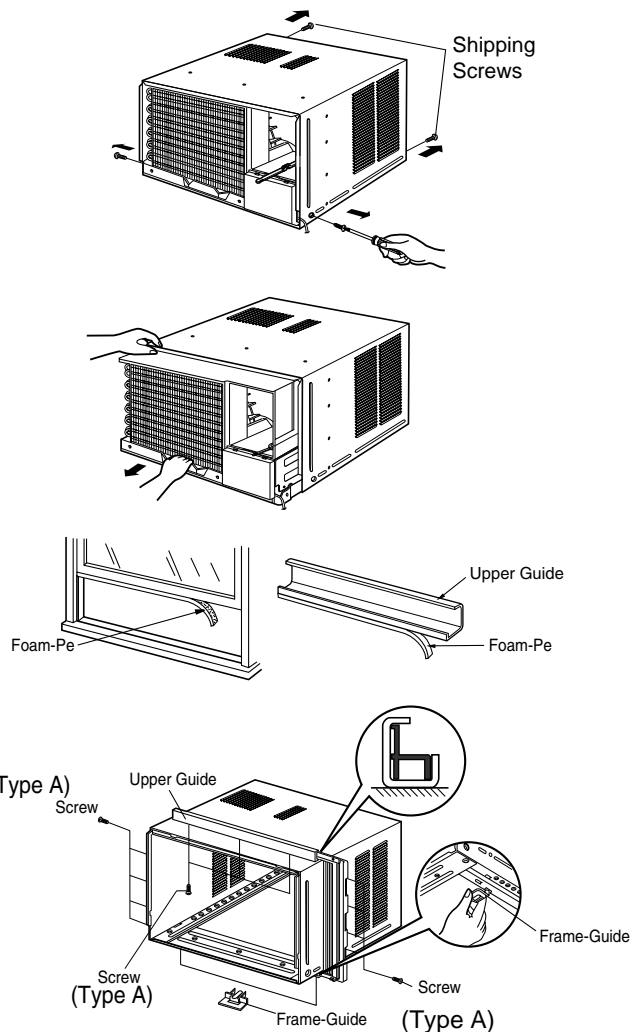
Figure 4

Installation

HARDWARE							
Type A:16EA (SCREW)	Type B:3EA (SCREW)	Type C:5EA (SCREW)	Type H:1EA (FOAM-STRIP)	Type I:1EA (UPPER GUIDE)	Type J:1EA (FOAM-PE)	Type K:2EA (FRAME-GUIDE)	
Type D:2EA (NUT)	Type E:2EA (FRAME CURTAIN)	Type F:2EA (SILL SUPPORT)	Type G:2EA (BOLT)	Type L:1EA (WINDOW LOCKING BRACKET)	Type M:1EA (FOAM-PE)	Type N:1EA (DRAIN JOINT PIPE)	Type O:1EA (DRAIN WASHER)

PREPARATION OF CHASSIS

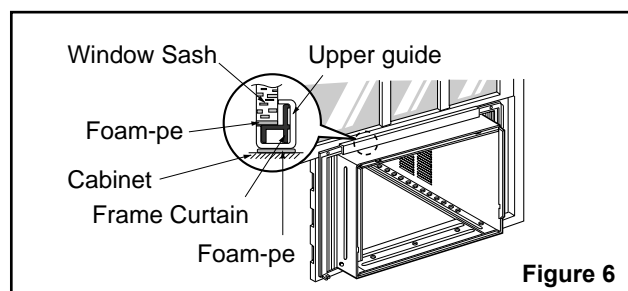
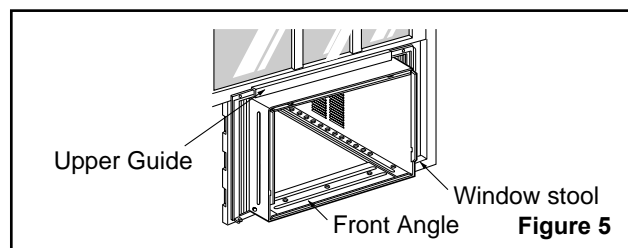
1. Remove the screws which fasten the cabinet at both sides and at the back.
2. Slide the unit from the cabinet by gripping the base pan handle and pulling forward while bracing the cabinet.
3. Cut the window sash seal to the proper length. Peel off the backing and attach the Foam-Pe to the underside of the window sash.
4. Remove the backing from the top Upper Guide Foam-Pe and attach it to the bottom of the Upper Guide.
5. Attach the Upper Guide onto the top of the cabinet with 3 type A screws.
6. Insert the Frame Guides into the bottom of the cabinet.
7. Insert the Frame Curtain into the Upper Guide and Frame Guides.
8. Fasten the curtains to the unit with 4 Type A screws.



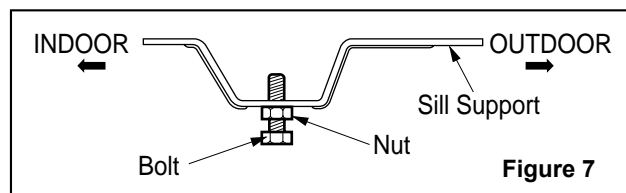
CABINET INSTALLATION

1. Open the window. Mark a line on center of the window stool(or desired air conditioner location). Carefully place the cabinet on the window stool and align the center mark on the bottom front with the center line marked in the window stool.
2. Pull the bottom window sash down behind the Upper Guide until it meets.

NOTICE Do not pull the window sash down so tightly that the movement of Frame Curtain is restricted.



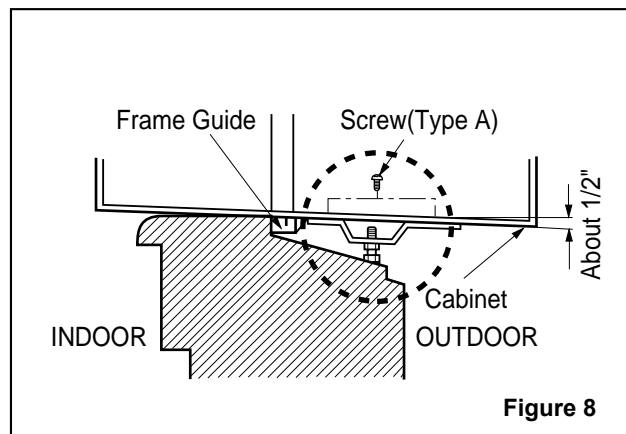
- Loosely assemble the Sill Support using the parts in Figure 7.



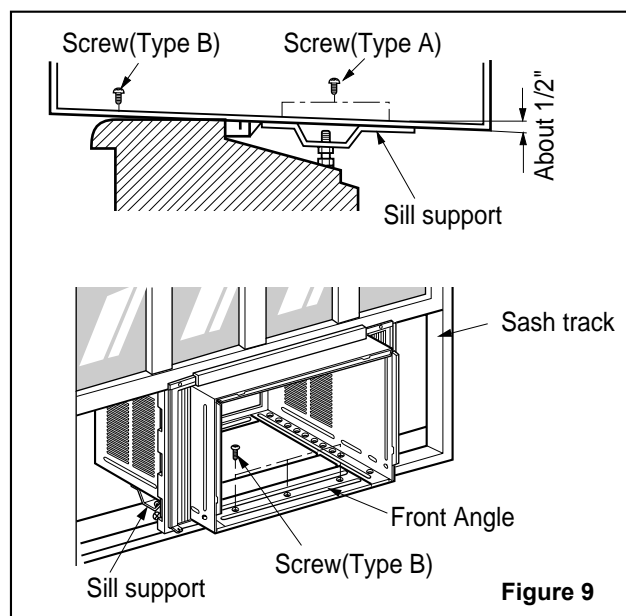
- Select the position that will place the Sill Support near the outer most point on sill (See Figure 8)

NOTICE Be careful when you install the cabinet (Frame Guides are broken so easily).

- Attach the Sill Support to the cabinet track hole in relation to the selected position using 2 Type A screws in each support(See Figure 8).



- The cabinet should be installed with a very **slight tilt(about 1/2") downward** toward the outside (See Figure 9).
Adjust the bolt and the nut of Sill Support for balancing the cabinet.



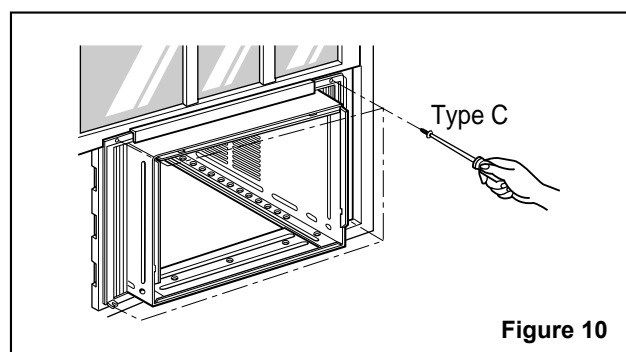
- Attach the cabinet to the window stool by driving the screws (Type B: Length sixteen millimeters and below.) through the front angle into window stool.

- Pull each Frame Curtain fully to each window sash track, and repeat step 2.

- Attach each Frame Curtain the window sash using screws (Type C).(See Figure 10)

CAUTION: DO NOT DRILL A HOLE IN THE BOTTOM PAN.

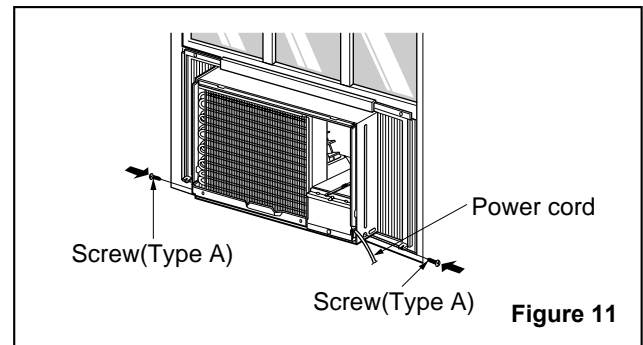
The unit is designed to operate with approximately 1/2" of water in bottom pan.



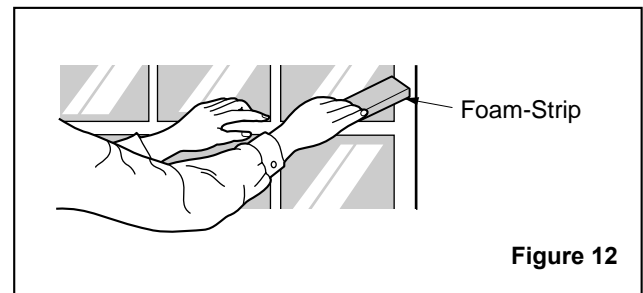
10. Slide the unit into the cabinet. (See Figure 11)



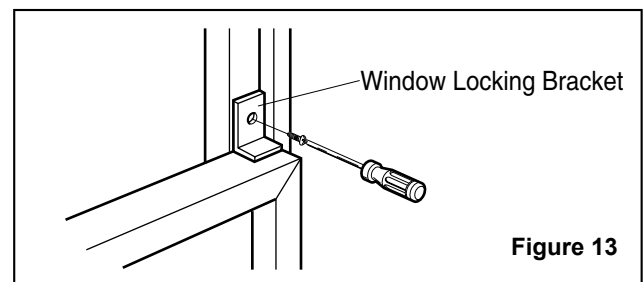
CAUTION: For security purpose, reinstall screws (Type A) at cabinet's sides.



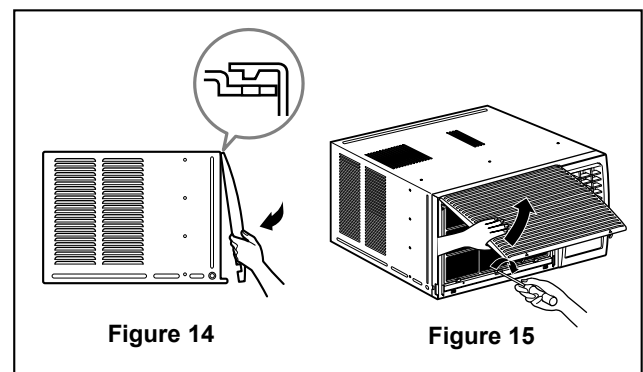
11. Cut the Foam-Strip to the proper length and insert between the upper window sash and the lower window sash. (See Figure 12)



12. Attach the Window Locking Bracket with a Type C screw. (See Figure 13)

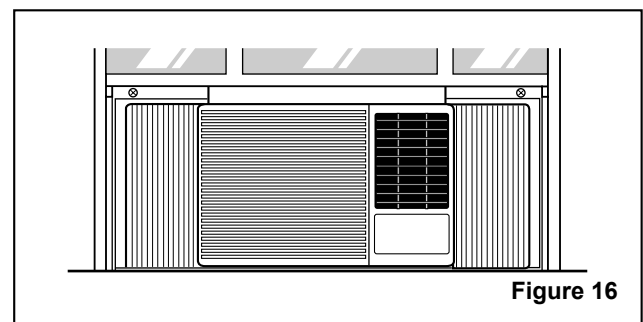


13. Attach the front grille to the cabinet by inserting the tabs on the grille into the tabs on the front of the cabinet. Push the grille in until it snaps into place. (See Figure 14)



14. Lift the inlet grille and secure it with a Type A screw through the front grille. (See Figure 15)

15. **Window installation of room air conditioner is now completed. See ELECTRICAL DATA for attaching power cord to electrical outlet.**

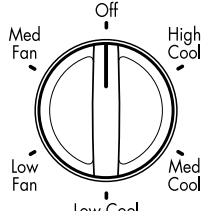
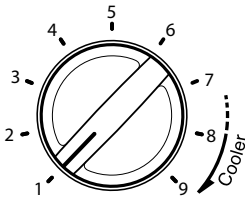


Operation

- DESIGNED FOR COOLING ONLY
- POWERFUL COOLING
- TOP-DOWN CHASSIS FOR THE SIMPLE INSTALLATION AND SERVICE
- BUILT-IN ADJUSTABLE THERMOSTAT
- WASHABLE ONE-TOUCH FILTER
- COMPACT SIZE

Location and Function of Controls

CAUTION: If you turn off the air conditioner or switch from cooling to the fan, wait at least 3 minutes before setting to cooling again.

<p>Operation</p> 	<p>Off - Turns air conditioner off. Med Fan - Med speed fan operation without cooling. Low Fan - Low speed fan operation without cooling. High Cool - Cooling with high speed fan operation. Med Cool - Cooling with med speed fan operation. Low Cool - Cooling with low speed fan operation.</p>
<p>Thermostat</p> 	<p>This automatically controls the temperature of the indoor air. Turn the knob so that arrow points to the larger marks for greater cooling. Point the arrow to the smaller marks for more moderate cooling. (i.e. the higher the number, the greater the cooling)</p>

FOR NORMAL COOLING

1. Turn the operation switch to the **High Cool** or the **Low Cool** setting.
2. Set the thermostat control to the desired temperature mark (the mid-point is a good starting position). If the room temperature is not satisfactory after a reasonable time, adjust the control to a cooler or warmer setting, as appropriate.

FOR MAXIMUM COOLING

1. Turn the operation switch to the **High Cool** setting.
2. Set the thermostat control to the largest temperature mark.

FOR QUIETER OPERATION

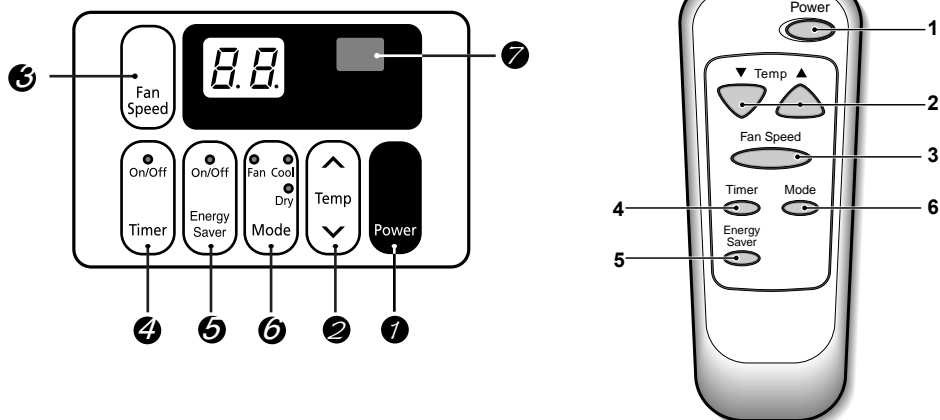
1. Turn the operation switch to the **Low Cool** setting.
2. Set the thermostat control as needed.

Remote Control Operations

CAUTION: The Remote Controller will not function properly if strong light strikes the sensor window of the air conditioner or if there are obstacles between the Remote Controller and the air conditioner.

The controls look like this:

Controls



1. Power

- To turn the Set ON, push the button. To turn the Set OFF, push the button again.
- This button takes priority over any other buttons.
- When you first turn it on, the Set is on the High cool mode and the temp. at 72°F

2. Temperature Setting

- This button controls the room temperature setting in a range between 60°F and 86°F in 1° increments.

3. Fan Speed

- Pressing the Fan Speed button toggles between Low and High speeds.

4. On/Off Timer

- Stopping Operation
Each press of the button cycles through the options in this order:
1 Hour → 2 Hours → 3 Hours → 4 Hours → 5 Hours → 6 Hours → 7 Hours → 8 Hours → 9 Hours →

10 Hours → 11 Hours → 12 Hours → CANCEL.

The set temperature will be raised by 2°F after 30 minutes and again after another 30 minutes.

- Starting Operation

Each press of the button cycles through the options in this order:

1 Hour → 2 Hours → 3 Hours → 4 Hours → 5 Hours → 6 Hours → 7 Hours → 8 Hours → 9 Hours → 10 Hours → 11 Hours → 12 Hours → CANCEL.

5. Energy Saver

The fan stops when the compressor stops cooling.

- Approximately every 3 minutes the fan will turn on and check the room air to determine if cooling is needed.

6. Cool/Fan/Dry

- Everytime you push this button, it will toggle between COOL, FAN, and DRY.

How to Insert Batteries

1. Remove the cover from the back of the remote controller
2. Insert two batteries.
 - Be sure of the polarity when installing the batteries.
 - Be sure that both batteries are new.
3. Re-attach the cover.



- Do not use rechargeable batteries. Such batteries differ from standard dry cells in shape, dimensions, and performance.
- Remove the batteries from the remote controller if the air conditioner is not going to be used for an extended length of time.

Disassembly

— Before the following disassembly, POWER SWITCH set to OFF and disconnect the power cord.

Mechanical Parts

1. FRONT GRILLE

1. Open the Inlet grille upward or downward.
2. Remove the screw which fastens the front grille.
3. Pull the front grille from the right side.
4. Remove the front grille.
5. Re-install the component by referring to the removal procedure, above. (See Figure 17)

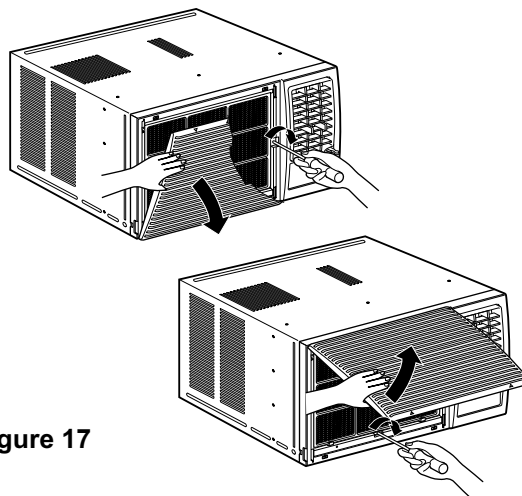


Figure 17

2. CABINET

1. After disassembling the FRONT GRILLE, remove the 2 screws which fasten the cabinet at both sides.
2. Remove the 2 screws which fasten the cabinet at back.
3. Pull the base pan forward. (See Figure 18)
4. Remove the cabinet.
5. Re-install the component by referring to the removal procedure, above.

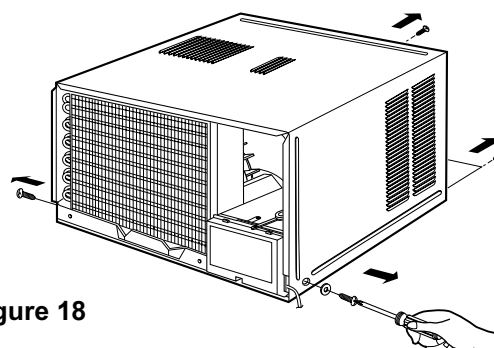


Figure 18

3. CONTROL BOX

1. Disconnect the unit from the power source.
2. Remove the front grille.
3. Remove the cabinet.
4. Remove the screw which fastens the control box cover.
5. Remove the housing which connects motor wire in the control box.
6. Remove the 3 leads from the compressor.
7. Discharge the capacitor by placing a 20,000 ohm resistor across the capacitor terminals.
8. Remove the 2 screws which fasten the control box. (See Figure 19)
9. Pull the control box forward completely.
10. Re-install the components by referring to the removal procedure, above. (See Figure 19)

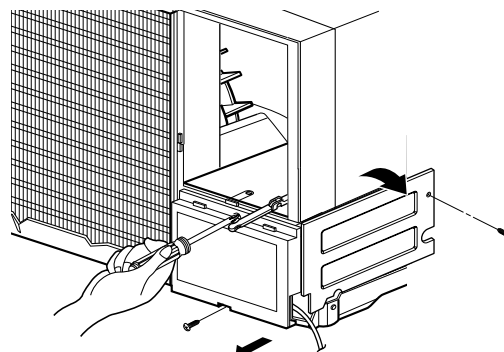


Figure 19

Air Handling Parts

1. AIR GUIDE AND BLOWER

1. Remove the front grille.
2. Remove the cabinet.
3. Remove the control box.
4. Remove the 3 screws which fasten the brace.
5. Remove the brace.
6. Remove the 2 screws which fasten the evaporator.
7. Move the evaporator forward and pulling it upward slightly. (See Figure 20)
8. Move the evaporator to the left carefully.
9. Pull out the hook of orifice by pushing the tabs and remove it. (See Figure 21)
10. Remove the clamp with a hand plier which secures the blower.
11. Remove the blower.
12. Remove the 4 screws which fasten the air guide from the barrier.
13. Move the air guide backward, pulling out from the base pan.
14. Re-install the components by referring to the removal procedure, above.

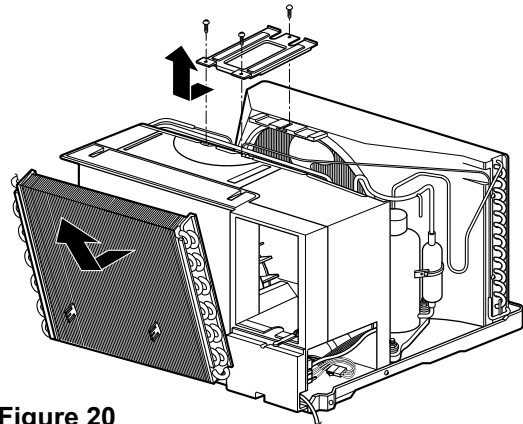


Figure 20

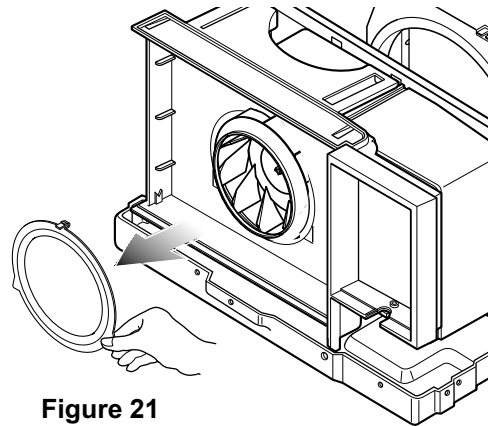


Figure 21

2. FAN AND SHROUD

1. Remove the cabinet.
2. Remove the brace.
3. Remove the 3 screws which fasten the condenser.
4. Move the condenser to the left carefully.
5. Remove the clamp which secures the fan.
6. Remove the fan and then pull out the shroud. (See Figure 22)
7. Re-install by referring to the removal procedure.

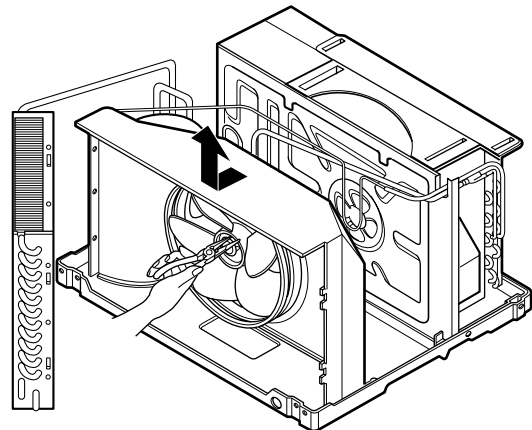


Figure 22

3. MOTOR

1. Remove the cabinet.
2. Remove the evaporator.
3. Remove the orifice.
4. Remove the blower.
5. Remove the fan.
6. Remove the control box cover and housing of the motor in the control box.
7. Remove the 2 screws which fasten the motor from the mount motor. (See Figure 23)
8. Remove the motor.
9. Re-install the components by referring to the removal procedure, above. (See Figure 23)

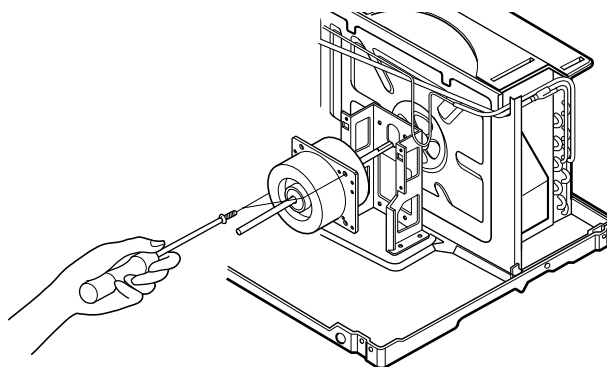


Figure 23

Electrical Parts

1. OVERLOAD PROTECTOR

1. Remove the cabinet.
2. Remove the nut which fastens the terminal cover.
3. Remove the terminal cover. (See Figure 24)
4. Remove all the leads from the overload protector.
5. Remove the overload protector.
6. Re-install the component by referring to the removal procedure, above.

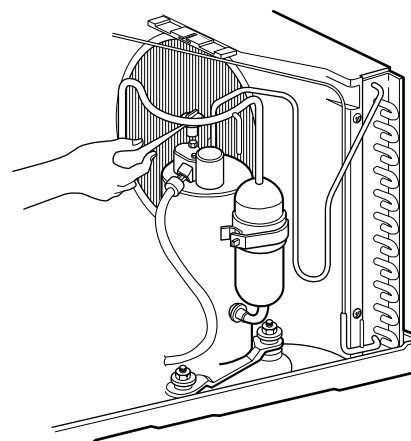


Figure 24

2. COMPRESSOR

1. Remove the cabinet.
2. Discharge the refrigerant system using a Freon™ Recovery System.
If there is no valve to attach the recovery system, install one (such as a WATCO A-1) before venting the Freon™. Leave the valve in place after servicing the system.
3. Remove the overload protector.
4. After purging the unit completely, unbrazed the suction and discharge tubes at the compressor connections.
5. Remove the 3 nuts and the 3 washers which fasten the compressor.
6. Remove the compressor. (See Figure 25)
7. Re-install the components by referring to the removal procedure, above.

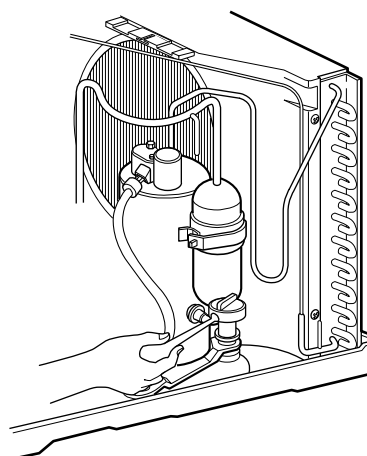


Figure 25

3. CAPACITOR

■ MODEL : ROTARY SWITCH TYPE MODEL

1. Remove the control box.
2. Remove the knobs and the screw which fasten control panel from control box.
3. Remove the screw which is located in the front.
4. Open the bottom side of control box.
5. Remove the screw and the clamp which fasten the capacitor.
6. Disconnect all the leads of capacitor terminals.
7. Re-install the components by referring to the removal procedure, above. (See Figure 26)

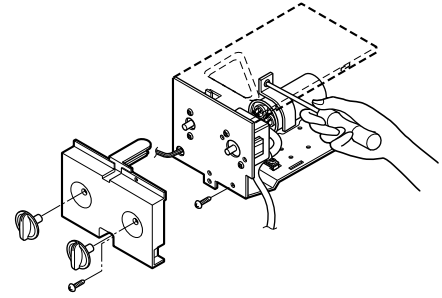


Figure 26

■ MODEL : TOUCH & REMOTE CONTROL TYPE MODEL

1. Remove the control box.
2. Remove the screw which fasten control panel from control box.
3. Remove the screw which located in the front.
4. Open the bottom side of control box.
5. Remove the screw and the clamp which fastens the capacitor.
6. Disconnect all the leads of capacitor terminals.
7. Re-install the components by referring to the removal procedure, above. (See Figure 27)

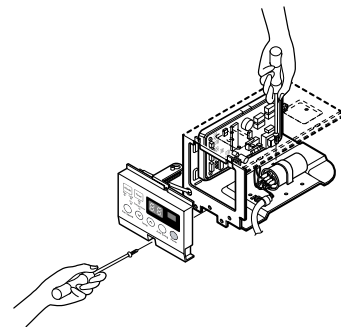


Figure 27

4. THERMOSTAT

■ MODEL : ROTARY SWITCH TYPE MODEL

1. Remove the control box.
2. Open the control box.
3. Remove the 2 screws which fasten the thermostat.
4. Disconnect 2 leads of thermostat terminals.
5. Remove the thermostat.
6. Re-install the components by referring to the above removal procedure. (See Figure 28)

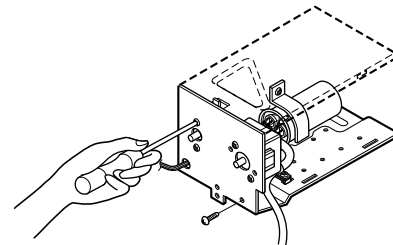


Figure 28

6. ROTARY SWITCH

■ MODEL : ROTARY SWITCH TYPE MODEL

1. Remove the control box.
2. Open the control box.
3. Remove the 2 screws which fasten the rotary switch.
4. Disconnect all the leads of the rotary switch terminals.
5. Remove the rotary switch.
6. Re-install the components by referring to the above removal procedure. (See Figure 29)

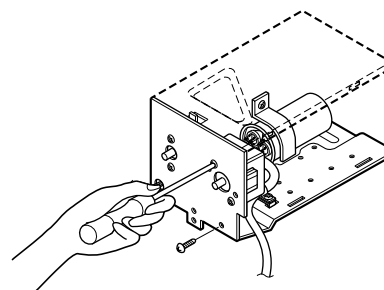


Figure 29

7. POWER CORD

1. Remove the control box.
2. Open the control box.
3. Disconnect the grounding screw from the control box.
4. Disconnect the 2 receptacles.
5. Remove a screw which fastens the clip cord. (See Figure 30)
6. Remove the power cord.
7. Re-install the component by referring to the above removal procedure, above. (Use only one ground-marked hole \oplus for ground connection.)
8. If the supply cord of this appliance is damaged, it must be replaced by the special cord. (The special cord means the cord which has the same specification marked on the supply cord attached at the unit.)

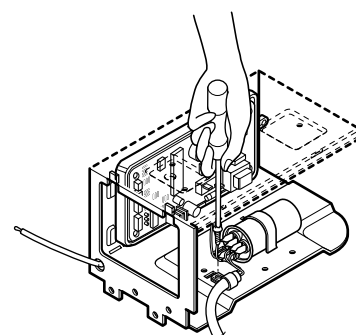


Figure 30

Refrigerating Cycle



CAUTION: Discharge the refrigerant system using a Freon™ Recovery System. If there is no valve to attach the recovery system, install one (such as a WATCO A-1) before venting the Freon™. Leave the valve in place after servicing the system.

1. CONDENSER

1. Remove the cabinet.
2. Remove the 3 screws which fasten the brace.
3. Remove the 3 screws which fasten the condenser and shroud.
4. After discharging the refrigerant completely, unbrazing the interconnecting tube at the condenser connections.
5. Remove the condenser carefully.
6. Re-install the component by referring to notes. (See Figure 31)

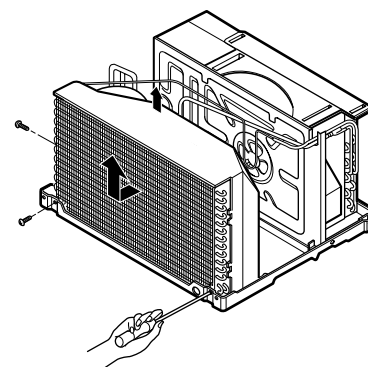


Figure 31

2. EVAPORATOR

1. Remove the cabinet.
2. Remove the 2 screws which fasten the evaporator.
3. Move the evaporator sideways carefully.
4. After discharging the refrigerant completely, unbrazed the interconnecting tube at the evaporator connections.
5. Remove the evaporator carefully.
6. Re-install the component by referring to notes.
(See Figure 32)

3. CAPILLARY TUBE

1. Remove the cabinet.
2. After discharging the refrigerant completely, unbrazed the interconnecting tube at the capillary tube.
3. Remove the capillary tube.
4. Re-install the component by referring to notes.

NOTICE

— Replacement of the refrigeration cycle.

1. When replacing the refrigeration cycle, be sure to Discharge the refrigerant system using a Freon™ recovery System.
If there is no valve to attach the recovery system, install one (such as a WATCO A-1) before venting the Freon™. Leave the valve in place after servicing the system.
2. After discharging the unit completely, remove the desired component, and unbrazed the pinch-off tubes.
3. Solder service valves into the pinch-off tube ports, leaving the valves open.
4. Solder the pinch-off tubes with Service valves.
5. Evacuate as follows.
 - 1) Connect the vacuum pump, as illustrated figure 33A.
 - 2) Start the vacuum pump, slowly open manifold valves A and B with two full turns counterclockwise and leave the valves open.
The vacuum pump is now pulling through valves A and B up to valve C by means of the manifold and entire system.

CAUTION: If high vacuum equipment is used, just crack valves A and B for a few minutes, then open slowly with the two full turns counterclockwise. This will keep oil from foaming and being drawn into the vacuum pump.

- 3) Operate the vacuum pump vacuum for 20 to 30 minutes, until 600 microns of vacuum is obtained. Close valves A and B, and observe vacuum gauge for a few minutes. A rise in pressure would indicate a possible leak or moisture

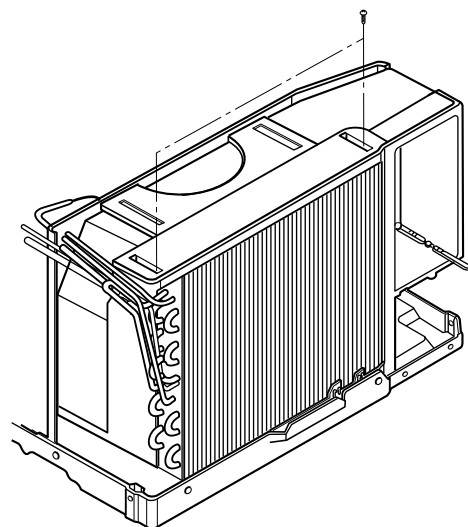


Figure 32

remaining in the system. With valves A and B closed, stop the vacuum pump.

- 4) Remove the hose from the vacuum pump and place it on the charging cylinder. See figure 37B. Open valve C.
Discharge the line at the manifold connection.
- 5) The system is now ready for final charging.
6. Recharge as follows :
 - 1) Refrigeration cycle systems are charged from the High-side. If the total charge cannot be put in the High-side, the balance will be put in the suction line through the access valve which you installed as the system was opened.
 - 2) Connect the charging cylinder as shown in figure 33B.
With valve C open, discharge the hose at the manifold connection.
 - 3) Open valve A and allow the proper charge to enter the system. Valve B is still closed.
 - 4) If more charge is required, the high-side will not take it. Close valve A.
 - 5) With the unit running, open valve B and add the balance of the charge.
 - a. Do not add the liquid refrigerant to the Low-side.
 - b. Watch the Low-side gauge; allow pressure to rise to 30 lbs.
 - c. Turn off valve B and allow pressure to drop.
 - d. Repeat steps b. and c. until the balance of the charge is in the system.
 - 6) When satisfied the unit is operating correctly, use the pinch-off tool with the unit still running and clamp on to the pinch-off tube. Using a tube cutter, cut the pinch-off tube about 2 inches from the pinch-off tool. Use sil-fos braze and braze pinch-off tube closed. Turn off the unit, allow it to set for a while, and then test the leakage of the pinch-off connection.

Equipment needed: Vacuum pump, Charging cylinder, Manifold gauge, Brazing equipment. Pin-off tool capable of making a vapor-proof seal, Leak detector, Tubing cutter, Hand Tools to remove components, Service valve.

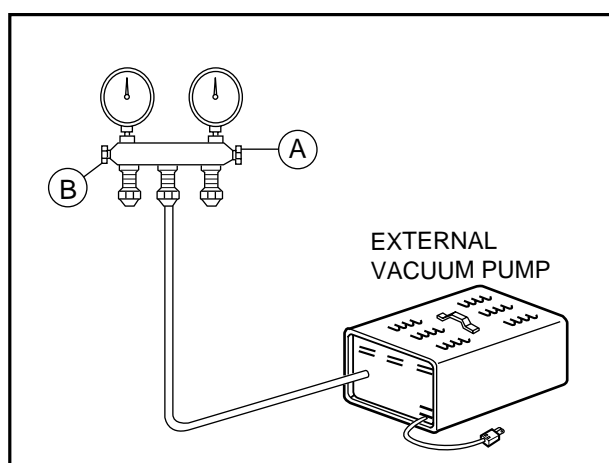
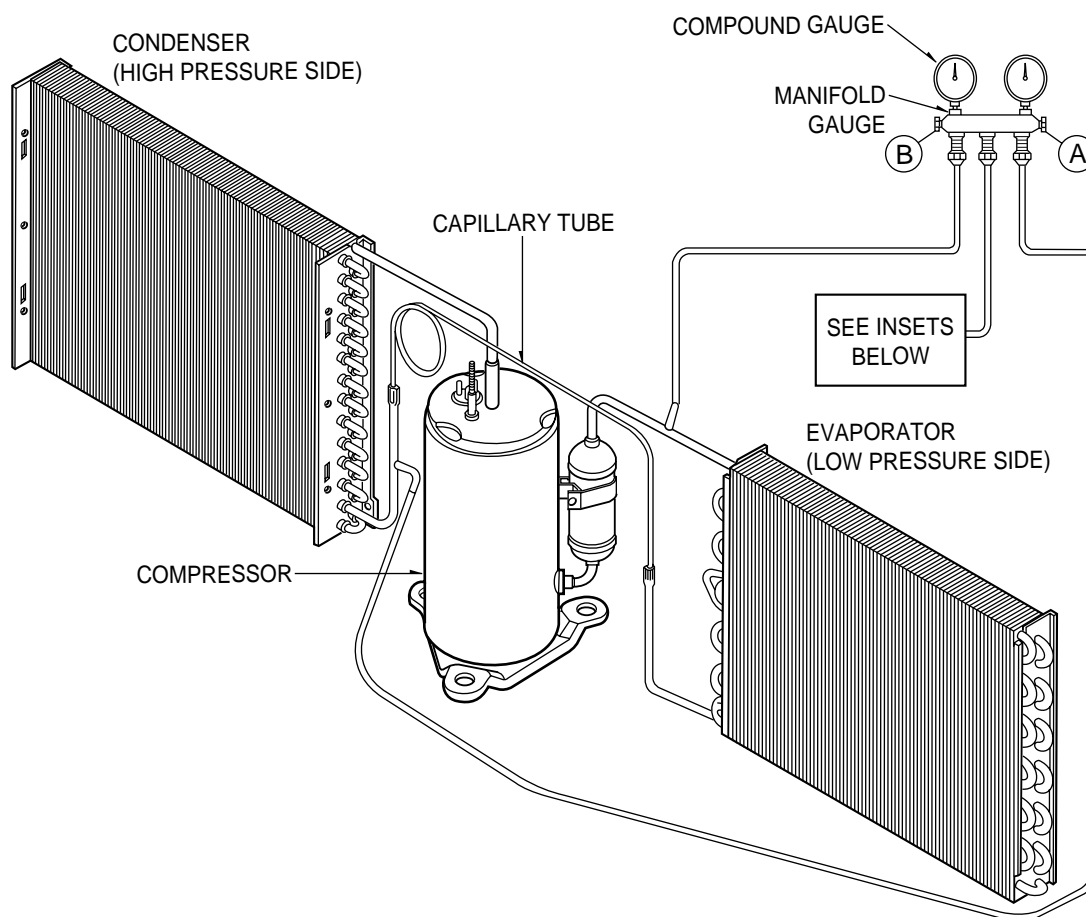


Figure 33A-Pulling Vacuum

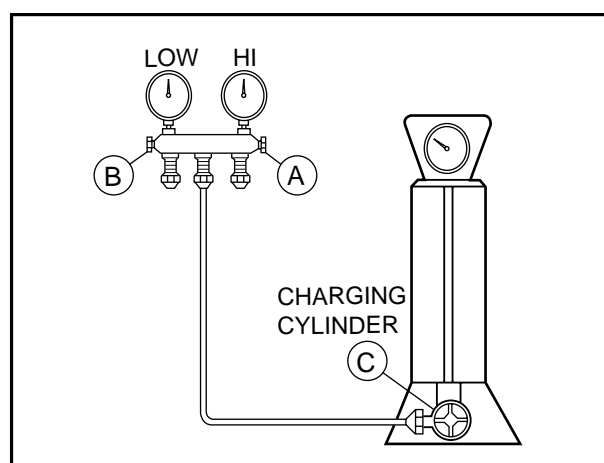
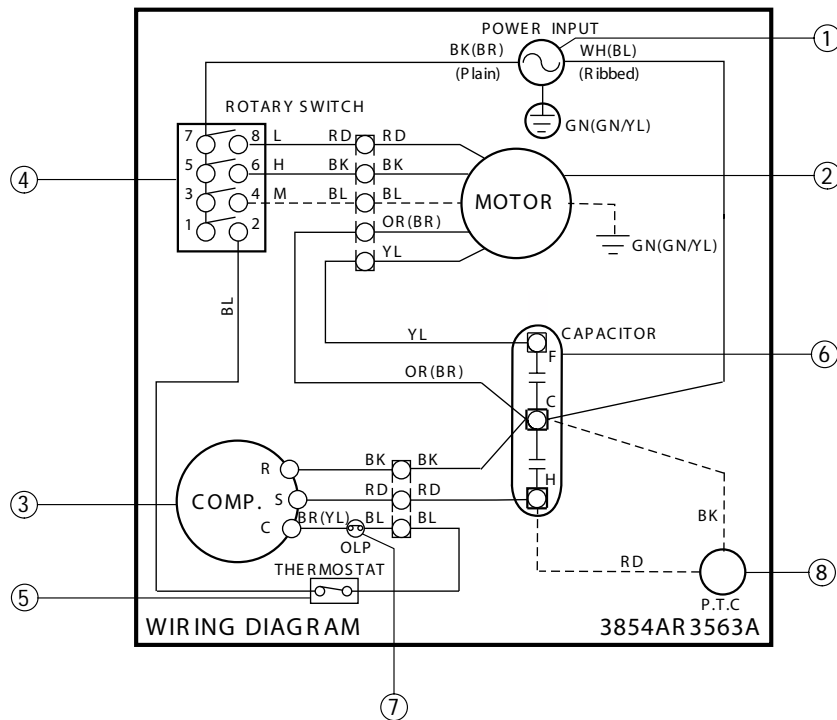


Figure 33B-Charging

Schematic Diagram

Wiring Diagram

MODEL : ROTARY SWITCH TYPE MODEL

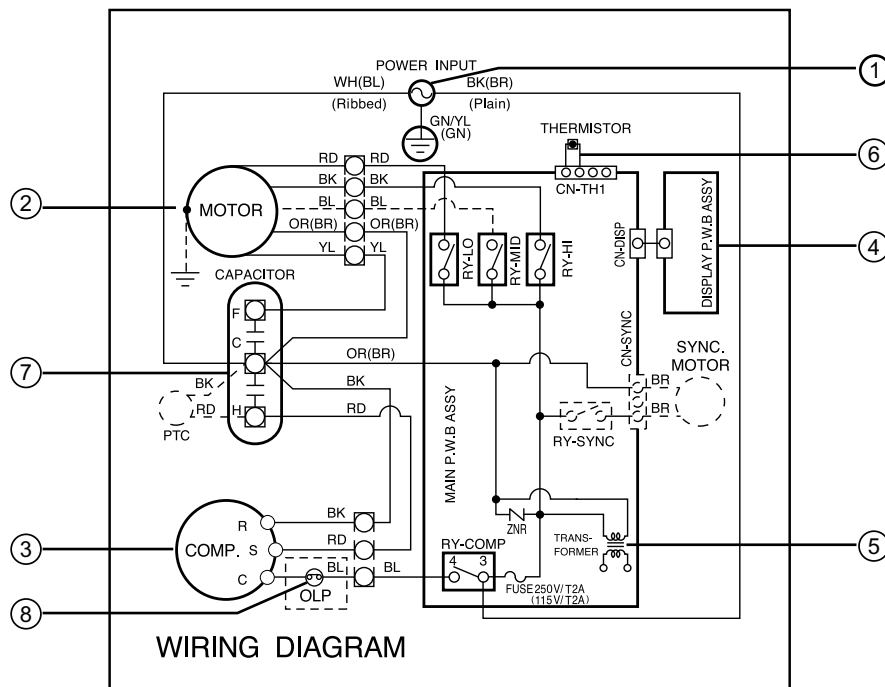


S: Service Parts
N: Non Service Parts

LOCATION NO.	DESCRIPTION	Q'TY PER SET	REMARKS
1	POWER CORD ASSY	1	S
2	FAN MOTOR	1	S
3	COMPRESSOR	1	S
4	ROTARY SWITCH	1	S
5	THERMOSTAT	1	S
6	CAPACITOR	1	S
7	OVERLOAD PROTECTOR	1	S
8	P.T.C	1	S

Circuit Diagram

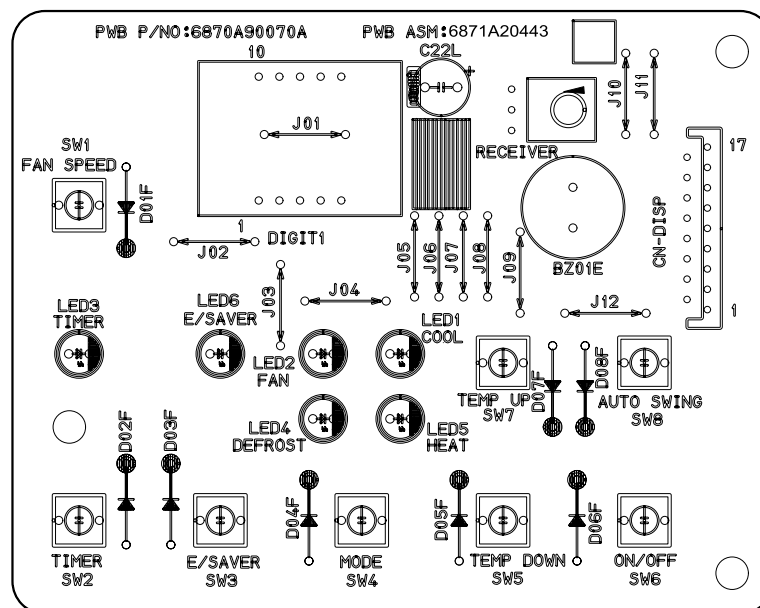
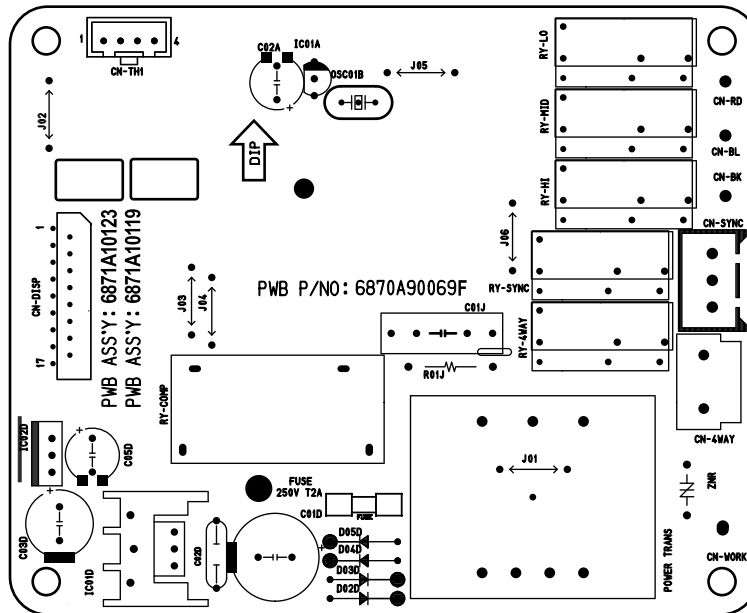
MODEL : TOUCH & REMOTE CONTROL TYPE MODEL



LOCATION NO.	DESCRIPTION	Q'TY PER SET
1	POWER CORD ASSEMBLY	1
2	FAN MOTOR	1
3	COMPRESSOR	1
4	DISPLAY P.W.B ASSEMBLY	1
5	MAIN P.W.B ASSEMBLY	1
6	THERMISTOR	1
7	CAPACITOR	1
8	OWERLOAD PROTECTOR	1



Components Location(For Main P.W.B ASM)



Troubleshooting Guide

Piping System

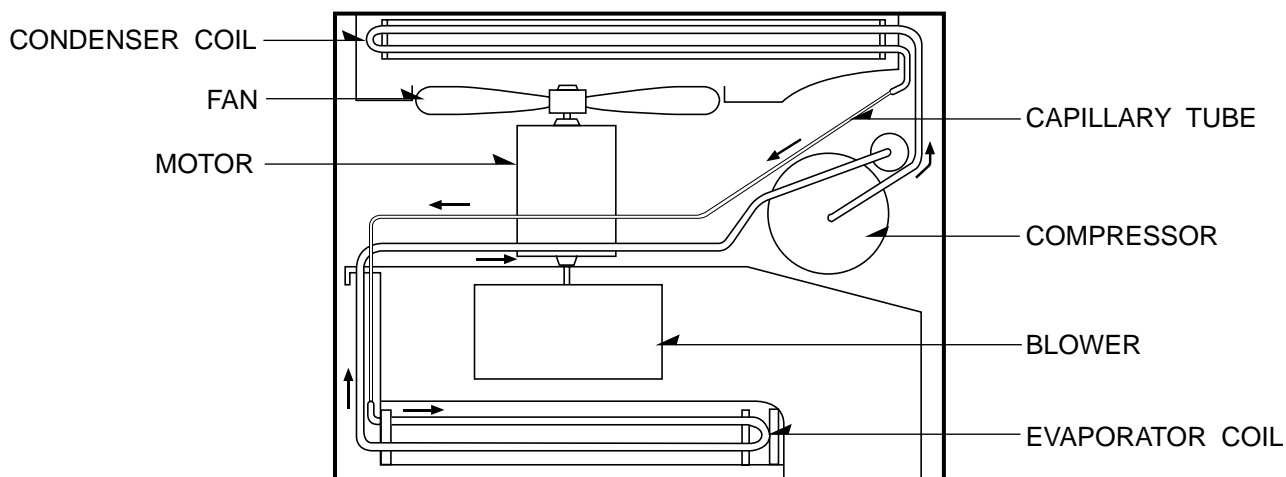
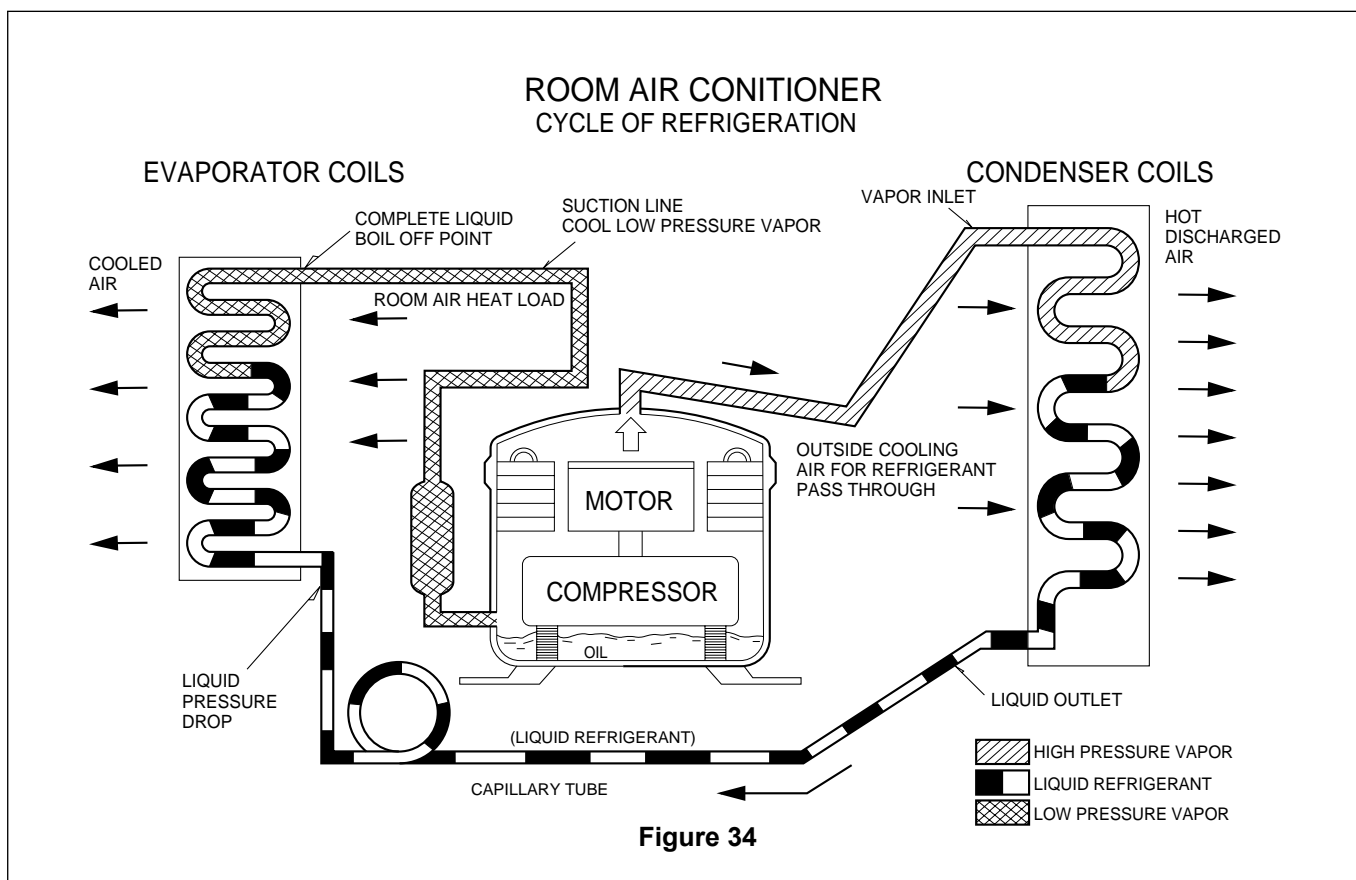


Figure 38 is a brief description of the important components and their function in what is called the refrigeration system. This will help you to understand the refrigeration cycle and the flow of the refrigerant in the cooling cycle.

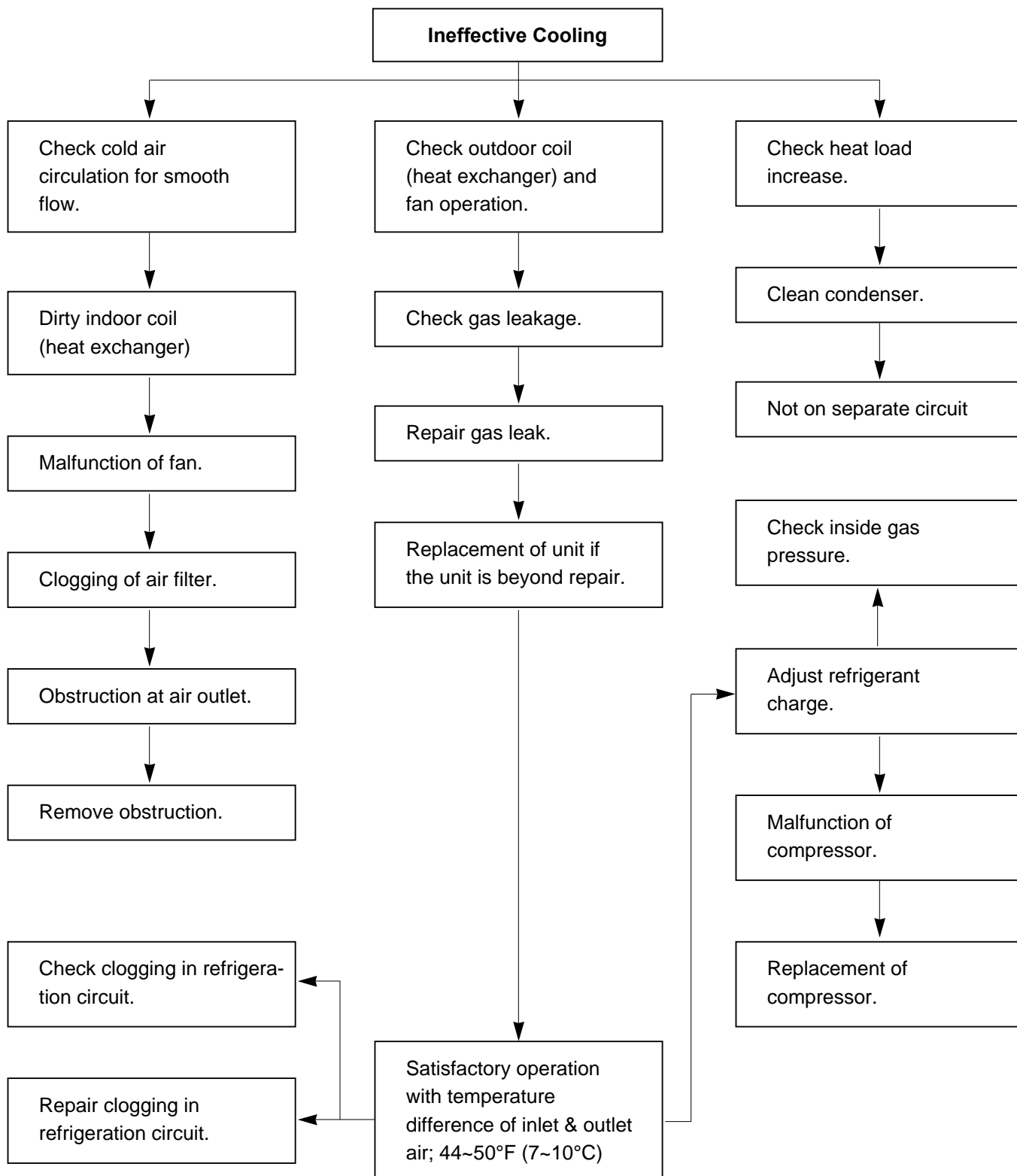


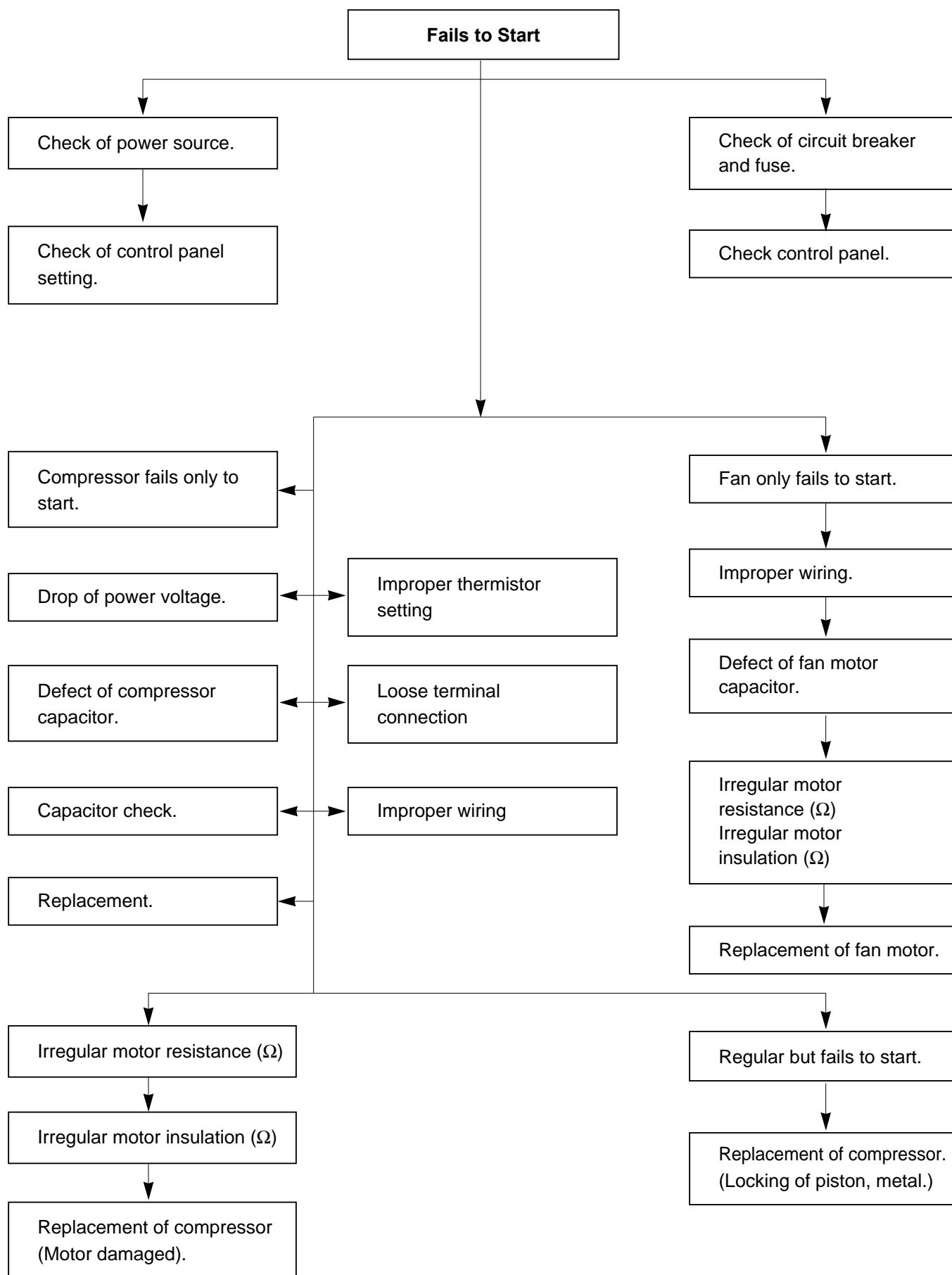
Troubleshooting Guide

In general, possible trouble is classified in two kinds.

The one is called Starting Failure which is caused from an electrical defect, and the other is ineffective Air Conditioning caused by a defect in the refrigeration circuit and improper application.

Unit runs but poor cooling.



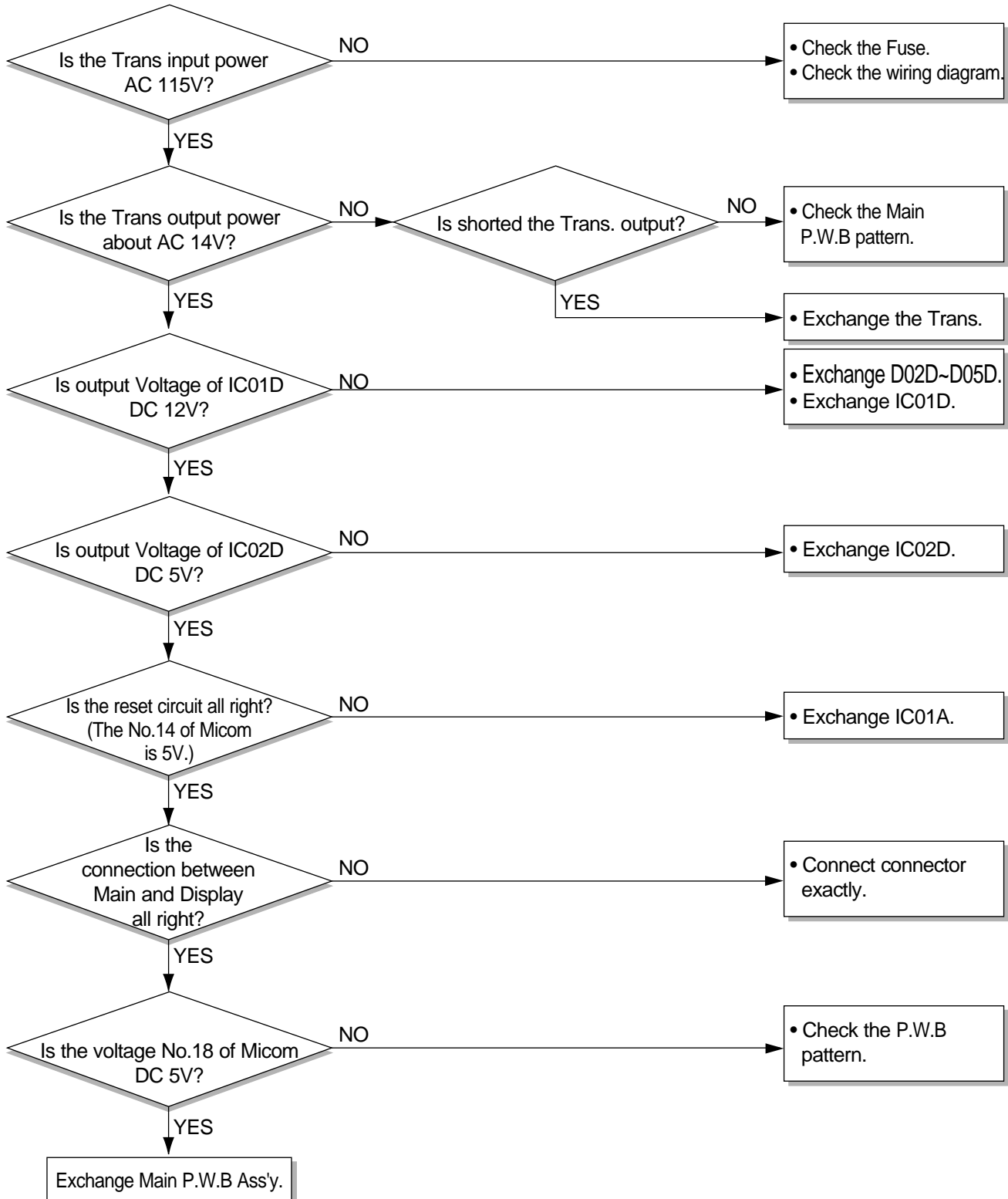


■ MODEL : RAD-101A

ELECTRIC PARTS TROUBLESHOOTING GUIDE:

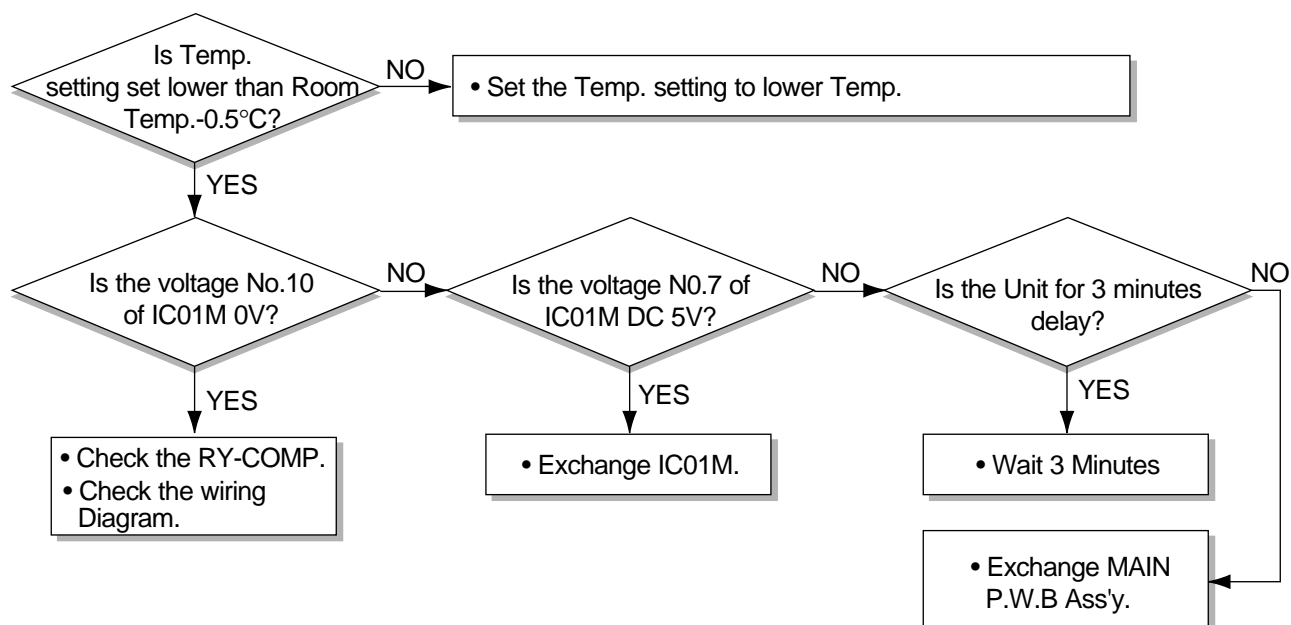
Possible Trouble 1

• The unit does not operate.



Possible Trouble 2

- The compressor does not operate.



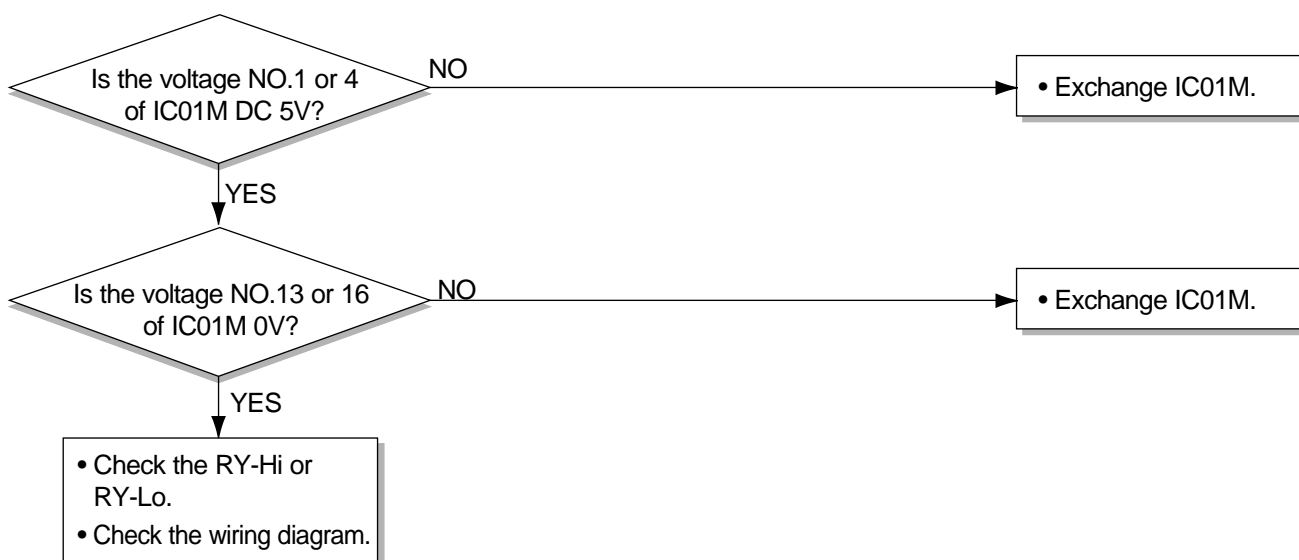
Possible Trouble 3

- The compressor always operate.



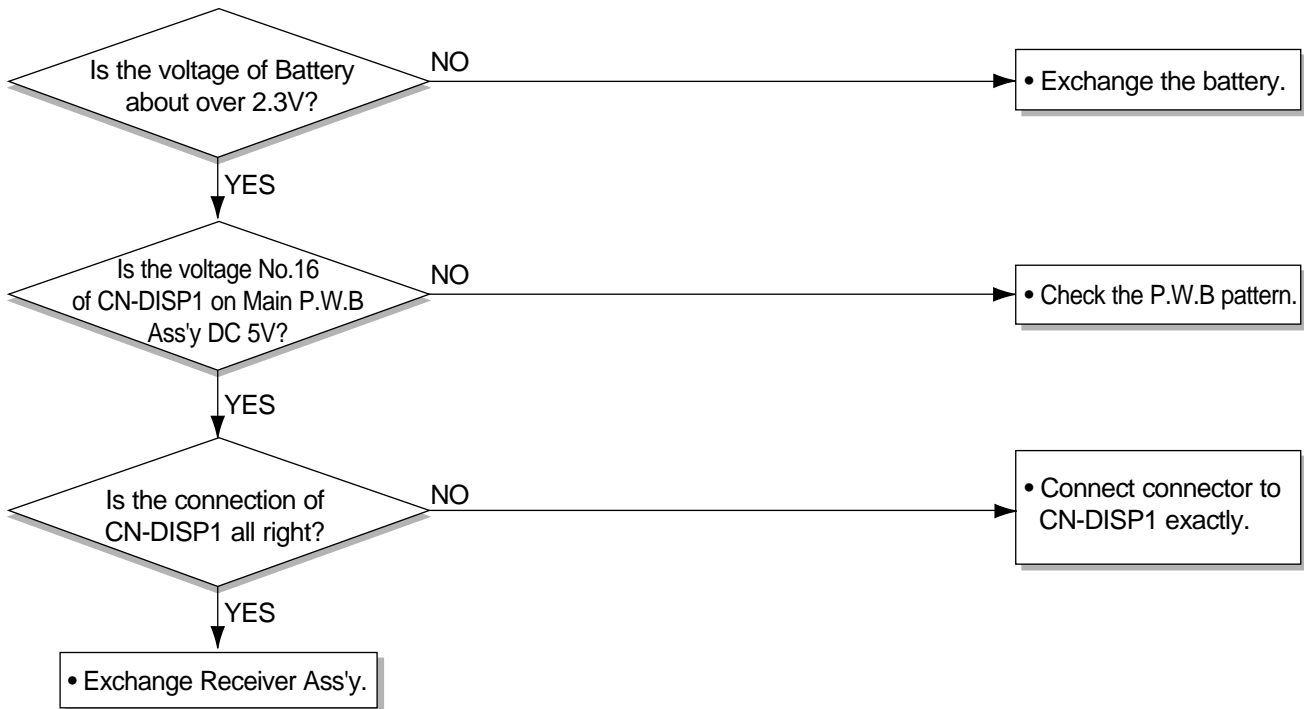
Possible Trouble 4

- Fan does not operate.



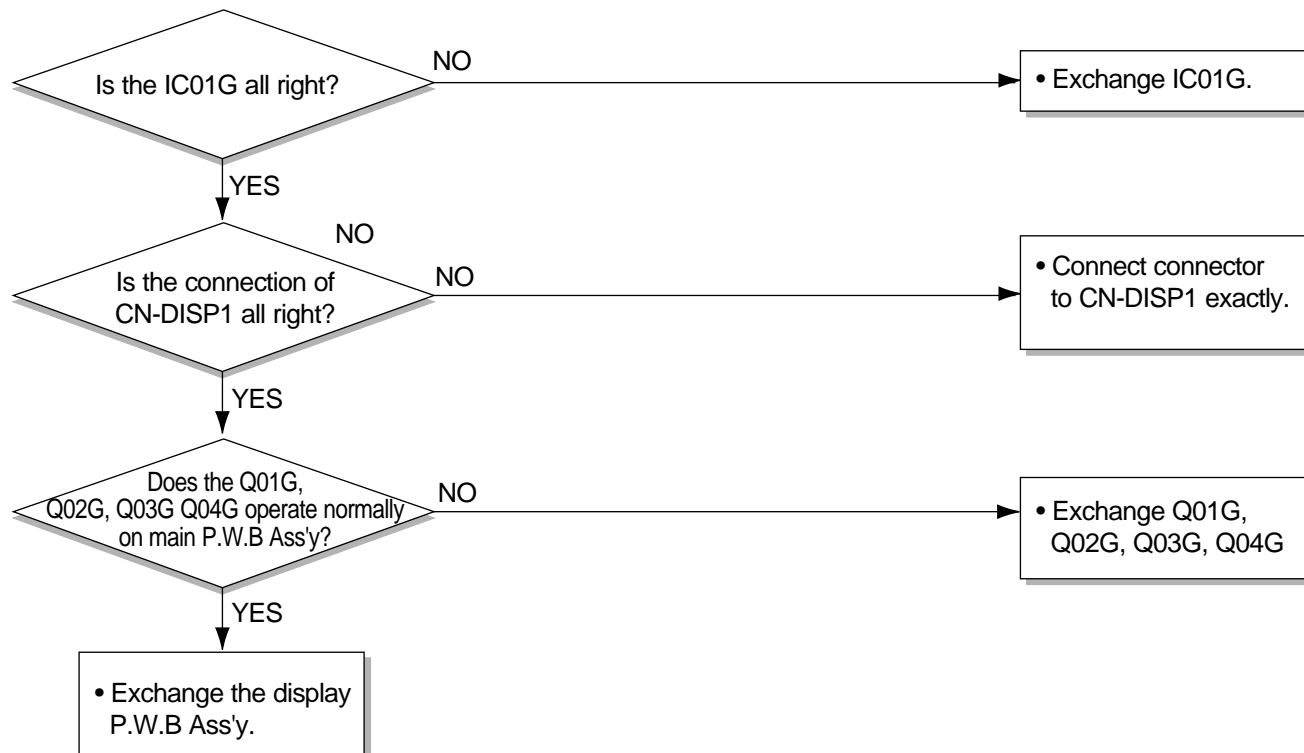
Possible Trouble 5

- Remote controller does not operate.



Possible Trouble 6

- It displays abnormally on Display P.W.B Ass'y.



ROOM AIR CONDITIONER VOLTAGE LIMITS

NAME PLATE RATING	MINIMUM	MAXIMUM
115V \pm 10%	103.5V	126.5V

COMPLAINT	CAUSE	REMEDY
Fan motor will not run.	No power	Check voltage at outlet. Correct if none.
	Power supply cord	Check voltage to rotary switch. If none, check power supply cord. Replace cord if circuit is open.
	Rotary switch	Check switch continuity. Refer to wiring diagram for terminal identification. Replace switch if defective.
	Wire disconnected or connection loose	Connect wire. Refer to wiring diagram for terminal identification. Repair or replace loose terminal.
	Capacitor (Discharge capacitor before testing.)	Test capacitor. Replace if not within $\pm 10\%$ of manufacturer's rating. Replace if shorted, open, or damaged.
	Will not rotate	Fan blade hitting shroud or blower wheel hitting scroll. Re-align assembly. Units using slinger ring condenser fans must have 0.22~0.25 inch clearance to the base. If necessary, shim up the bottom of the fan motor with mounting screw(s). Check fan motor bearings; if motor shaft will not rotate, replace the motor.
Fan motor runs.	Revolves on overload	Check voltage. See limits on this page. If not within limits, call an electrician. Test capacitor. Check bearings. Does the fan blade rotate freely? If not, replace fan motor. Pay attention to any change from high speed to low speed. If the speed does not change, replace the motor.

COMPLAINT	CAUSE	REMEDY
Fan motor noise.	Fan	If cracked, out of balance, or partially missing, replace it.
	Blower	If cracked, out of balance, or partially missing, replace it.
	Loose set screw	Tighten it.
	Worn bearings	If knocking sounds continue when running or loose, replace the motor. If the motor hums or noise appears to be internal while running, replace motor.
Compressor will not run, fan motor runs.	Voltage	Check voltage. See the limits on the preceding page. If not within limits, call an electrician.
	Wiring	Check the wire connections; if loose, repair or replace the terminal. If the wires are disconnected, refer to wiring diagram for identification, and replace the wires. Check the wire connections; If not according to the wiring diagram, correct the connections.
	Thermistor	Check the TEMP control. If not at the lowest number, set TEMP control to this setting and restart the unit.
		Check the continuity of the thermistor. Replace the thermistor if the circuit is open.
	Rotary	Check for continuity, refer to the wiring diagram for terminal identification. Replace the switch if the circuit is open.
	Thermostat	Check the position of knob. If not at the coldest setting, advance the knob to this setting and restart the unit.
		Check the continuity of the thermostat. Replace the thermostat if the circuit is open.
	Capacitor (discharge capacitor before servicing.)	Check the capacitor. Replace if not within $\pm 10\%$ of manufacturer's rating, replace if shorted, open, or damaged.
	Compressor	Check the compressor for open circuit or ground. If open or grounded, replace the compressor.
	Overload	Check the compressor overload if externally mounted. Replace if open. (If the compressor temperature is high, remove the overload, cool, and retest.)

COMPLAINT	CAUSE	REMEDY
Compressor cycles on overload.	Voltage	Check the voltage. See the limits on the preceding page. If voltage is not within these limits, call an electrician.
	Overload	Check overload, if externally mounted. Replace if open. (If the compressor temperature is high, remove the overload, cool, and retest.)
Compressor cycles on overload.	Fan motor	If not running, determine the cause. Replace if required.
	Condenser air flow restriction	Remove the cabinet, inspect the interior surface of the condenser. If restricted, clean carefully with a vacuum cleaner (do not damage fins) or brush. Clean the interior base before re-assembling.
	Condenser fins (damaged)	If the condenser fins are closed over a large area on the coil surface, head pressures will increase, causing the compressor to cycle. Straighten the fins or replace the coil.
	Capacitor	Test the capacitor.
	Wiring	Check the terminals. If loose, repair or replace.
	Refrigeration system	Check the system for a restriction.
Insufficient cooling	Air filter	If restricted, clean or replace.
	Unit undersized	Determine if the unit is properly sized for the area to be cooled.
Excessive noise	Blower or fan	Check the set screw, or clamp. If loose or missing, correct. If the blower or fan is hitting scroll or barrier, rearrange the air handling parts.
	Copper tubing	Remove the cabinet and carefully rearrange the tubing not to contact the cabinet, compressor, shroud, and barrier.

Specifications and performance data subject to change without notice.

HEAT CONTROLLER, INC.

1900 WELLWORTH AVENUE • JACKSON, MICHIGAN 49203

THE QUALITY LEADER IN CONDITIONING AIR